

Abstract

SECURITY READER FOR AUTOMATIC DETECTION OF TAMPERING AND ALTERATION

5 A document (10) is covered by a laminate (13) comprising a layer of
microspheres (16) over an adhesive layer (14) covering a source image (12) such
as a photograph, printed matter, or a bar code arranged on a substrate (11). Light
impinging on the document (10) is split by the optical properties of the microspheres (16)
and underlying specular reflectors. The remaining light passes through the microspheres
10 (16), through the adhesive layer (14) and strikes the substrate (11) or source image (12) on
the document (10), and is reflected (18) and scattered (20). Alternatively, the laminate
(13) can comprise a plain or clear layer of polyester without microspheres over the
adhesive layer (14). Light impinging on the laminate (13) passes through the polyester and
laminate (14) to strike the substrate (11) or source image (12) where it is reflected and
15 scattered. A first light source (24) directs light to the document (10). A second light
source (26,27) directs light towards a beam splitting mirror (23) which reflects the light to
the document (10). The light turning properties of the mirror (23) produce a light source
which appears to an image receiver (40) as being returned from the surface of the
document (10) at an angle of less than 1°. The image receiver (40) passes a signal via line
20 (32) to a personal computer (41) which processes the received information. Such
processing is to establish whether the document (10) includes a retroreflective laminate, a
plain polyester laminate, or neither. Additionally, further processing can establish whether
the document (10) has been tampered with, altered, or forged.